NOTES.

No. 10. This is a remarkable object. I have never seen one just like it. It resembles an elliptical planetary nebula. The light is evenly diffused, and the limb as sharp as a planet. Strange, Sir WILLIAM HERSCHEL missed it, being so near his III 665. Munich 9619 is nf $121^s$.

No. 17. This also is a singular object. I have never seen but one resembling it, and that was on the same night, which I think is N. G. C. 6861. It resembles a close, bright, double star, each component having a small, bright, round, star-like, nebulous disc. A power of 200 failed to divide it.

The places are for 1900.0, and the year of discovery, except when otherwise noted, is for 1897.

N. G. C. 6550 must be struck out, as it is identical with H. III 555.

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## ECLIPSE OF THE SUN, JULY 29, 1897.

BY DAVID E. HADDEN.

The partial eclipse of the Sun on July 29th ult. was observed in Alta, Iowa, under favorable conditions, the sky being cloudless. First contact occurred at $7^h\ 33^m\ 02^s$; the Sun's disc was a little unsteady, and this time is probably a few seconds late. Last contact was noted at $9^h\ 35^m\ 47^s$ and is quite accurate, the definition being fine.

The limb of the advancing Moon bisected the larger sun-spot nearest the west limb at $7^h\ 47^m\ 20^s$, and its reappearance was observed at $8^h\ 20^m\ 55^s$. An interesting phenomenon was the apparent blackening of the umbra of the sun-spot, as the edge of the Moon reached it (the umbra before appearing a shade lighter than the Moon). I also noticed a peculiar lengthening of the umbra toward the Moon's limb as it reached its edge — a "black drop" appearance on a very small scale. I hardly think this was owing to the inequalities of the Moon's edge, as the same appearance was repeated during the spot's reappearance.

The sunlight was quite decidedly changed about mid-eclipse, and the temperature of the air in the shade fell four degrees, as recorded by a registering minimum thermometer. Time used is

Central Standard. Telescope used was a four-inch BRASHEAR equatorial, with Herschelian eye-piece, power 78.

ALTA, Iowa { Lat. 42° 40′ N. / Long. 6h 21m W. } Approx.

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## NOTES ON THE TOTAL ECLIPSE OF THE SUN, JANUARY 21–22, 1898, IN INDIA.

BY COLONEL A. BURTON-BROWN, R. A., F. R. A. S.
[Member of the Astronomical Society of the Pacific.]

The central line of totality on the west coast of India passes between Ratnagiri and Rajapur, the latitude of which place is 16° 40′ N., and longitude 73° 35′ E. of Greenwich. Totality commences 22d—0h 47m 42s; has a duration of nearly 2m 2s, and the Sun's altitude is 53°, about. The line of shadow strikes across India, cutting the river Ganges a few miles south of Balia and passing on to Jubang in Nepaul, where the duration of totality would be reduced by about 23s and Sun's altitude by about one-third. There are many circumstances which will influence observers in selecting stations beyond that of the Sun's altitude and length of totality. The most important one will probably be the weather conditions between 0h 30m and 2h 15m. Now, if India were a great plain, we might consider that in the third week in January that the conditions of weather will be equally favorable from the west coast to the Ganges, but as the country is a series of undulations, including some hills, local circumstances must be taken into account, and from my own observations and those of others, I am inclined to consider the height of the station which is from 500 to 1500 feet above the sea would be the most satisfactory if not in close proximity to higher ground, and if not within twenty miles either of the seacoast or the Ganges river. Places from 73° 30′ to 75° 45′ east longitude I find are slightly freer from cloud than places east and west of that longitude. Although the daily mean cloud in other places may not be greater, it is often more variable. I am inclined to advise, from atmospheric conditions as well as the position of the Sun and length of totality, that a fairly elevated position on or near the central line between those limits be taken up. No doubt stations north of Rajapur and Nagpur will be selected by some observers, but while the climatic conditions